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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,549	04/30/2001	Anthony Mark Pasqualoni	341.6910USU	3388

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EXAMINER	
MARCHESCHI, MICHAEL A	
ART UNIT	PAPER NUMBER
1755	5

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Please find below and/or attached an Office communication concerning this application or proceeding.

MK 5

'Office Action Summary	Application No.	Applicant(s)	
	09/845,549	PASQUALONI ET AL.	
	Examiner	Art Unit	
	Michael A Marcheschi	1755	

-- The MAILING DATE of this communication appears on the cov r sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 October 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *30 and 31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Applicant's election with traverse of group 1, claims 1-29 in Paper No. 4 is acknowledged. The traversal is on the ground(s) that they have a common invention. This is not found persuasive because applicants have not shown any convincing evidence to rebut the examiners reasons for the restriction requirement.

The requirement is still deemed proper and is therefore made FINAL.

Claims 5, 6 and 14-18 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 is indefinite as to the phrase "various ammonium salts, such as" because the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). With this being indefinite, what does "**various** ammonium salts" encompass in terms of the types of salts.

Claim 14 is indefinite because the phrase "the copper removal rate" lacks antecedent basis since a "copper removal rate" has not been **literally** defined before. In addition claim 1 never defines that the slurry is used for removal of copper.

The other claims are indefinite because they depend on indefinite claims.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grumbine et al. (711) in view of Steckenrider et al. and Hampden-Smith et al.

Grumbine et al. teach in column 4, line 60-column 8, line 50, a polishing composition having a pH less than 9 comprising 3-45% abrasive dispersion of fumed silica having a size of less than 0.4 microns, an oxidizer (hydrogen peroxide), a corrosion inhibitor (benzotriazole as shown in table 1 or obvious from the description in column 5, lines 35-45), a pH adjustor (nitric acid as shown in the examples). The composition can contain surfactants, stabilizers and any other well know polishing additives. Amounts for the above components are also defined. Column 10, lines 1-9 defines a method for making the composition which comprises mixing a silica dispersion with the additives (oxidizer) and filtering the dispersion. Example 3 shows that the composition is filtered at least 3 times

Steckenrider et al. teach in section [0034] and the claims, that amines (triethanolamine) are well known polishing additives to be added to tungsten polishing slurries in the claimed amount.

Hampden-Smith et al. teach in sections [0243]-[0244] that ammonia (complexing agent) is well known polishing additive to be added to tungsten or tantalum polishing slurries.

The primary reference teaches a polishing composition which comprises all of the claimed components in the claimed amounts and although the reference does not define the "large particle count...of a size greater than about 0.5 microns" as can be seen from the claims this can be zero (less than reads on zero). Therefore the size of the abrasive particles encompasses and therefore makes obvious the instant claims. The reference uses a corrosion

inhibitor and table 1 shows that this can be benzotriazole. In the alternative, benzotriazole is encompassed and therefore obvious from the description of this component in column 5, lines 35-45. In view of this, the limitations of claims 1-13, 19, 20, 24, 25, 27 and 28 are met. The amount of the pH adjusting compound and the specific pH adjusting compound are obvious because it is the examiners position that the claimed amount is within the scope of the skilled artisan in order to adjust the pH to the range defined by the reference. It is also the examiners position that the specific type of pH adjustor is obvious and one skilled in the art would have found the use of any other organic acid obvious to adjust the pH to fall within the reference range. Thus the limitations of claims 21-23 are obvious. The use of an amine or ammonia in the composition according to the primary reference would have been obvious because this reference states that **any other well known polishing additive may be used**, and since ammonia and amines are well known polishing slurry additives, as shown by the secondary references, the use thereof is obvious and well within the level of ordinary skill in the art. With respect to the amount of ammonia used, the claimed amount would have been obvious because one skilled in the art would have known that this amount is beneficial for a complexing agent (ammonia) when admixed into a polishing slurry composition in the absence of any evidence showing the contrary. In view of the above, claims 14-18 and 26 are met. The primary reference teaches a method which reads on the instant claims and the "large particle count" is obvious for the same reasons define above, thus instant claims 27-28 are met. Example 3 of the primary reference shows that the composition is filtered at least 3 times, thus reading on claim 29. In the alternative, multiple filtration steps are obvious to the skilled artisan because this will maximize

the filtration of the slurry by removing the maximum unwanted contaminants from the slurry prior to use.

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman et al. (306) in view Hampden-Smith et al.

Kaufman et al. teach in column 4, line 57-column 10, line 62, a polishing composition having a pH of 2-12 comprising 3-45% abrasive dispersion of fumed silica having a size of less than 0.4 microns, an oxidizer (hydrogen peroxide), a film forming agent (benzotriazole), an amine (triethanolamine), a pH adjustor (any known acid base or amine). The composition can contain surfactants, stabilizers and any other well known polishing additives. Amounts for the above components are also defined.

The primary reference teaches a polishing composition which comprises all of the claimed components in the claimed amounts and although the reference does not define the "large particle count...of a size greater than about 0.5 microns" as can be seen from the claims this can be zero (less than reads on zero). Therefore the size of the abrasive particles encompasses and therefore makes obvious the instant claims. In view of this, the limitations of claims 1-16, 19, and 24-26 are met. The amount of the pH adjusting compound and the specific pH adjusting compounds are obvious because it is the examiners position that the claimed amount is within the scope of the skilled artisan in order to adjust the pH to the range defined by the reference. It is also the examiners position that the specific type of pH adjustor is obvious and one skilled in the art would have found the use of any organic acid obvious to adjust the pH to fall within the reference range. Thus the limitations of claims 20-23 are obvious. The use of

ammonia in the composition according to the primary reference would have been obvious because this reference states that **any other well known polishing additive may be used**, and since ammonia is a well known polishing slurry additive, as shown by the secondary reference, the use thereof is obvious and well within the level of ordinary skill in the art. With respect to the amount of ammonia used, this claimed amount would have been obvious because one skilled in the art would have known that this amount is beneficial for a complexing agent (ammonia) when admixed into a polishing slurry composition in the absence of any evidence showing the contrary. In the alternative, the reference states that any known base can be used to adjust the pH and this reads on the use of ammonia. In view of the above, claims 17-18 are met.

Claims 1-6, 24, 25, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burke et al. in view of Kaufman et al. (306).

Burke et al. teach in figures 1-2 and in column 3, line 17-column 4, line 22, a polishing composition comprising an abrasive having a size within the claimed range, an oxidizer, a surfactant and water. The reference also teaches a method for making the slurry.

The primary reference teaches a polishing composition which comprises all of the claimed components. The reference also suggests the "particle count" which encompasses and therefore makes obvious the instant limitation. Although this reference does not use an abrasive dispersion, no patentable distinction is seen to exist because when the abrasive is mixed with water, and a surfactant, a dispersion is produced. In the alternative, the use of an abrasive dispersion would have been obvious to the skilled artisan because this is a well known way to incorporate the abrasive into a polishing composition, as shown by Kaufman et al. The primary

reference states that silica is used as the abrasive and column 4, lines 5-6 and the particle sizes defined suggest that the silica is colloidal, thus encompassing fumed silica. The amount of abrasive and oxidizer used is obvious to the skilled artisan because the claimed amounts are conventional amounts for these components as shown by the secondary reference. Finally, with respect to the pH, it is the examiners position that since all compositions have a pH value, the reference composition will have a pH which falls within the scope of instant claim 24 in the absence of any evidence showing the contrary.

With respect to the method of making the slurry, the reference teaches filtering the slurry. Although the filtering step takes place before the addition of the abrasive particle, no distinction is seen to exist because "reversing the order of steps in a process does not impart patentability **when no unexpected result is obtained**. Ex parte Rubin (POBA 1959) 128 U.S.P.Q. 440, Cohn v. Comr. Pats. (DCDC 1966) 251 F Supp 378, 148 U.S.P.Q. 486. **Applicants are required to show unexpected results to overcome this case law**. In the alternative, filtering the slurry after the abrasive is mixed therein is obvious to the skilled artisan because this will remove any unwanted contaminants from the slurry prior to use. Multiple filtration steps is also obvious to the skilled artisan because this will maximize the filtration of the slurry by removing the maximum unwanted contaminants from the slurry prior to use.

Claims 1-8, 14, 15 and 17-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fang in view of Kaufman et al. (306).

Fang teaches in column 1, line 65-column 5, line 68, a polishing composition having a pH of at least 7 comprising an abrasive having a size within the claimed range, an oxidizer (peroxide, i.e. hydrogen peroxide being obvious), ammonia, a surfactant and water.

The primary reference teaches a polishing composition which comprises all of the claimed components. Although this reference does not use an abrasive dispersion, no patentable distinction is seen to exist because when the abrasive is mixed with water, a dispersion is produced. In the alternative, the use of an abrasive dispersion would have been obvious to the skilled artisan because this is a well known way to incorporate the abrasive into a polishing composition, as shown by Kaufman et al. The primary reference states that silica is used in an amount which is within the claimed amount and the particle sizes defined suggest that the silica is colloidal, thus encompassing fumed silica. Although the reference does not define the "large particle count" as can be seen from the claims, this can be zero (less than reads on zero). Therefore the size of the abrasive particles encompasses and therefore makes obvious the instant claims. The reference uses ammonia and the reference states that any suitable amount can be used, thus broadly reading on the amount of claim 18 in the absence of any evidence showing the contrary. The amount of the pH adjusting compound is obvious because it is the examiners position that the claimed amount is within the scope of the skilled artisan in order to adjust the pH to the range defined by the reference. It is also the examiners position that the specific type of pH adjustor is obvious and one skilled in the art would have found the use of any other organic acid obvious to adjust the pH to fall within the reference range. Thus the limitations of claims 21-23 are obvious.

Claims 1-7 and 9-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (352) in view of Kaufman et al. (306) and Hampden-Smith et al.

Lee et al. teach in column 2, line 53-column 4, line 21-44, a polishing composition having a pH of 7 comprising 3-10% of a silica abrasive (Aerosil 90 as shown in example 5), an oxidizer (a peroxide which reads on hydrogen peroxide), benzotriazole, a pH adjustor, an accelerator (encompasses the broad interpretation of claim 14) and water. The composition can contain surfactants, and any other well known polishing additives. Amounts for some of the above components are also defined. The reference also teaches a method for making a polishing composition which comprises mixing an aqueous medium, a silica abrasive and an oxidizer together to form a slurry and filtering the slurry.

The primary reference teaches a polishing composition which comprises all of the claimed components. Column 4, line 25 implies that an abrasive dispersion is used. In the alternative, the use of an abrasive dispersion would have been obvious to the skilled artisan because this is a well known way to incorporate the abrasive into a polishing composition, as shown by Kaufman et al. The primary reference states that silica is used in an amount which is within the claimed amount and the particle size defined by "Aerosil 90" suggest that the silica is colloidal, thus encompassing fumed silica. Although the reference does not define the "large particle count" as can be seen from the claims, this can be zero (less than reads on zero). Therefore the size of the abrasive particles encompasses and therefore makes obvious the instant claims. The primary reference uses benzotriazole and it is the examiners positions that the amount for this component would have been obvious because Kaufman et al. teaches a conventional amount for this component to be used and therefore this limitation is well within the level of skilled artisan.

With respect to claim 14, the primary reference uses an accelerator and this encompasses the broad interpretation of this claimed additive. In addition, the use of ammonia and an amine in the composition according to the primary reference would have been obvious because this reference states that **any other well known polishing additive may be used**, and since ammonia and amines are well known polishing slurry additive, as shown by the secondary references, the use thereof is obvious and well within the level of ordinary skill in the art. With respect to the amount of ammonia used, this claimed amount would have been obvious because one skilled in the art would have known that this amount is beneficial for a complexing agent (ammonia) when admixed into a polishing slurry composition in the absence of any evidence showing the contrary. In view of this, the limitations of claims 1-7, 9-19, and 25-26 are met. The amount of the pH adjusting compound and the specific pH adjusting compounds are obvious because it is the examiners position that the claimed amount is within the scope of the skilled artisan in order to adjust the pH to the range defined by the reference. It is also the examiners position that the specific types of pH adjustor is obvious and one skilled in the art would have found the use of organic acids obvious to adjust the pH to fall within the reference range. Thus, the limitations of claims 20-23 are obvious. With respect to the pH (claim 24), the primary reference teaches a pH of 7 and since the term "**about**" is used in claimed invention, no patentable distinction is seen to exist in the absence of any critical evidence showing the contrary because "about" **permits some tolerance**, *In re Ayers*, 154 F 2d 182, 69 USPQ 109. Finally, the primary reference teaches a method which reads on the instant claims and the "large particle count" is obvious for the same reasons define above, thus instant claims 27-28 are met. Multiple filtration steps

(claim 29) are obvious to the skilled artisan because this will maximize the filtration of the slurry by removing the maximum unwanted contaminants from the slurry prior to use.

In view of the teachings as set forth above, it is the examiners position that the references reasonably teach or suggest the limitations of the rejected claims.

"A reference is good not only for what it teaches but also for what one of ordinary skill might reasonably infer from the teachings. ***In re Opprecht*** **12 USPQ 2d 1235, 1236 (CAFC 1989);** ***In re Bode*** **USPQ 12;** ***In re Lamberti*** **192 USPQ 278;** ***In re Bozek*** **163 USPQ 545, 549 (CCPA 1969);** ***In re Van Mater*** **144 USPQ 421;** ***In re Jacoby*** **135 USPQ 317;** ***In re LeGrice*** **133 USPQ 365;** ***In re Preda*** **159 USPQ 342 (CCPA 1968)". In addition, "A reference can be used for all it realistically teaches and is not limited to the disclosure in its preferred embodiments" See** ***In re Van Marter*****, 144 USPQ 421.**

"A generic disclosure renders a claimed species prima facie obvious. ***Ex parte George*** **21 USPQ 2d 1057, 1060 (BPAI 1991);** ***In re Woodruff*** **16 USPQ 2d 1934;** ***Merk & Co. v. Biocraft Lab. Inc.*** **10 USPQ 2d 1843 (Fed. Cir. 1983);** ***In re Susi*** **169 USPQ 423 (CCPA 1971)".**

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see ***In re Malagari*****, 182 U.S.P.Q. 549;** ***In re Wertheim*** **191 USPQ 90 (CCPA 1976)".**

Evidence of unexpected results must be clear and convincing. *In re Lohr* 137 USPQ 548. Evidence of unexpected results must be commensurate in scope with the subject matter claimed. *In re Linder* 173 USPQ 356.

The additional references cited on the 1449 have been reviewed by the examiner and are considered to be art of interest since they are cumulative to or less than the art relied upon in the above rejections.

Any foreign language documents submitted by applicant has been considered to the extent of the short explanation of significance, English abstract or English equivalent, if appropriate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Marcheschi whose telephone number is (703) 308-3815. The examiner can be normally be reached on Monday through Thursday between the hours of 8:30-6:00 and every other Friday between the hours of 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor, Mark L. Bell, can be reached at (703) 308-3823.

Amendments can also be sent by fax to the numbers set forth below:

For after final amendments, the fax number is (703) 872-9311;

For non-final amendments, the fax number is 703 872-9310.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Michael Marcheschi
Art unit 1755
11/02

MICHAEL MARCHESCHI
PRIMARY EXAMINER